

WHAT IS CLAIMED IS:

1. A radiation image pick-up apparatus
comprising:

conversion means for converting radiation into an
5 electrical signal;

accumulation means for accumulating the electrical
signal converted by said conversion means;

read means for reading out the electrical signal
accumulated in said accumulation means;

10 detection means for detecting start and end of
irradiation of the radiation;

a driving circuit for accumulating the electrical
signal in said accumulation means responsive to a
detection of the start of irradiation of the radiation,
15 and for driving said read means responsive to a
detection of the end of irradiation of the radiation is
detected, based on a detection result of said detection
means; and

control means for controlling said driving
20 circuit.

2. An apparatus according to claim 1, wherein
said control means stops driving said read means by
said driving circuit or an external input when read of
25 the electrical signal by said read means ends.

3. An apparatus according to claim 1, wherein

said control means is IC chip circuit.

4. An apparatus according to claim 1, wherein
said control means performs idling operation of said
5 conversion means before the accumulation operation.

5. An apparatus according to claim 4, wherein the
idling operation continues until the start of
irradiation of the radiation is detected, and when the
10 start of irradiation of the radiation is detected, said
accumulation means is driven to perform accumulation
operation.

6. An apparatus according to claim 5, wherein an
15 operation time T_a of the idling operation and a time T_r
for driving said read means in order to read out image
information satisfy $T_r \geq T_a$.

7. An apparatus according to claim 1, further
20 comprising:

an analog/digital converter for converting into a
digital signal an electrical signal read out by the
read operation and idling operation; and

a memory for storing electrical signals converted
25 by said analog/digital converter.

8. An apparatus according to claim 7, wherein

said memory includes one of a hard disk, a
magneto-optical disk, and a random access memory.

9. An apparatus according to claim 8, wherein
5 said memory is loadable/unloadable into/from a main
body of the radiation image pick-up apparatus.

10. An apparatus according to claim 1, further
comprising a loadable/unloadable battery for driving a
10 main body of the radiation image pick-up apparatus.

11. An apparatus according to claim 1, wherein
said conversion means comprises:

a wavelength for converting the radiation into
15 light; and

photoelectric conversion means for converting the
light converted by said wavelength into an electrical
signal.

20 12. An apparatus according to claim 1, wherein
said conversion means contains one material selected
from the group consisting of lead iodide, mercurous
iodide, selenium, cadmium telluride, gallium arsenide,
gallium phosphide, zinc sulfide, and silicon for
25 directly converting the radiation into an electric
charge.

13. An apparatus according to claim 1, wherein said conversion means and said read means contain amorphous silicon and are formed by the same step.

5 14. An apparatus according to claim 11, wherein said wavelength converter is disposed at a position in tight contact with said photoelectric conversion means.

10 15. An apparatus according to claim 11, wherein said wavelength converter contains one material selected from the group consisting of Gd_2O_2S , Gd_2O_3 , and CsI as a major component.

15 16. A method of driving a radiation image pick-up apparatus for obtaining image information by converting radiation which irradiates an object to be examined into an electrical signal by a conversion element for converting the radiation into an electrical signal, comprising steps of:

20 an accumulation operation of detecting start of irradiation of the radiation and accumulating the converted electrical signal;

 a read operation of detecting end of irradiation of the radiation and reading out the accumulated
25 electrical signal; and

 an idling operation of performing idle read of the conversion element before the accumulation operation.

17. A method according to claim 16, further
comprising a step of an operation of adding frame data
in the idling operation immediately before the
accumulation operation and frame data in the read
5 operation, and a step of outputting a sum as an image.

18. A radiation image pick-up system comprising:
a radiation image pick-up apparatus defined in
claim 1; and
10 a radiation source for emitting radiation to said
radiation image pick-up apparatus.